

**CLAIMS:**

1. An infra red detector calibration system (50) comprising a reference surface 52 which comprises a plurality of hollow corner cubes which are partially reflective and partially emissive, temperature controlling means (54, 58) adapted to maintain the reference surface (52) at a desired calibration temperature, processing means (62, 64) for receiving an output signal generated by an infrared detector (56) at said the desired calibration temperature, comparing said detector output signal with a predetermined ideal output signal for said desired calibration temperature and calculating a calibration coefficient on the basis of the difference between the detector output signal and the ideal output signal at said desired calibration temperature.
2. An infra red detector calibration system according to claim 1 wherein the emissivity of the reference surface is controlled by controlling the temperature of said reference surface.
3. An infra red detector calibration system, according to claims 1 or 2, wherein each corner cube comprises a reflective surface and a matt surface to form an effective surface emissivity of N%.
4. An infra red detector calibration system according to claim 3, wherein the reflective surface comprises a silvered surface.
5. An infra red detector calibration system according to claim 3, wherein the reflective surface comprises an aluminised surface.
6. An infra red detector calibration system according to any one of claims 3 to 5, wherein the matt surface comprises a matt black paint overlying the reflective surface.
7. An infra red detector calibration system according to any one of claims 3 to 5, wherein the matt surface comprises a non-reflective surface etched into the reflective surface.
8. A method of calibrating an infra red detector comprising a plurality of detector elements using a reference surface (52), the method comprising:-

- a) presenting the reference surface (52) at a known temperature to an infra red detector;
  - b) measuring the output of each detector element;
  - c) comparing the measured output of each detector element with a nominal output for the known reference surface temperature to determine a calibration error at the known temperature; and
  - d) heating the reference surface to one or more further known temperatures and repeating steps b) and c) to determine a calibration errors for each of the further known temperatures.
- 10 9. A method according to claim 8, further comprising the step of calculating a function relating the output error of each detector element to the temperature of the reference surface (52).
10. A method according to claim 9, wherein the function is a polynomial function.
- 15 A method according to any one of claims 8 to 10, further comprising the step of storing the calibration constants for application to readings obtained from the detector.
12. An infra red detector calibration arrangement substantially as hereinbefore described with reference to the accompanying drawings.
- 20 13. A method of calibrating an infra red detector substantially as hereinbefore described with reference to Figure 4 of the accompanying drawings.